

PROCEEDINGS
OF THE
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NOTES ON GENERA OF PANICEAE. III.*

BY AGNES CHASE.

The grasses in *Paniceae* having two forms of spikelet† form one well-defined group, the *Olyrac*, an outstanding genus, *Amphicarpon*, and a small group of polygamous grasses, *Phyllorachis*, *Thuarea* and *Spinifer*, not closely related to each other nor to any other genera in this tribe. The latter group will be taken up in a later paper. In natural systems these forms have been disposed of in various ways, only the more important of which are here considered, as the history of the classification of this tribe will be taken up later.

Beauvois'‡ disposition of these forms is interesting since his is the first attempt at a systematic arrangement of all the known genera of Gramineae into divisions and subdivisions. His confidence in the enduring excellence of his Méthode, however much the rest of the Essai might fall short of perfection, is also interesting.§ He places these forms in "Familia II. Polythalama. Locustae dissimiles;" "Tribus quarta, axis integer. Glumae alternatim insertae," [as distinguished from tribe III *Tripsacum*, etc.]. *Olyra* comes under "Cohors Octava. Axes androgyni" with *Zizania* and *Pharus*, while *Lithachne* comes under "Cohors Nona. Axes monoici aut dioici. Sectio Prima. Axes monoici"

* Notes on Paniceae I appeared in Proc. Biol. Soc. Wash. 19: 183-192. Dec. 1906; Notes on Paniceae II op. cit. 21: 1-10. Jan. 1908.

† The text figures in the present paper are all magnified 5 diameters only, as most of the fruits in this group are unusually large.

‡ Agros. tab. meth. and pp. 124, 135, 137; 1812.

§ Les changements qu'on pourra y faire par la suite, pourront porter sur quelques détails, sur des réunions ou des séparations de genres; mais je ne pense pas qu'ils puissent attaquer en rien les bases et les principes de la Méthode. Les genres y sont tous distingués par des caractères certains, constants et facile à saisir." Op. cit. Avertissement.

together with *Hydrochloa*, *Zea* and *Coix*, while *Spinifex* comes in "Sectio secunda. Axes dioici" with *Gynerium*.

Humboldt, Bonpland and Kunth (1815, Nov. Gen. 1:196) propose a "Section IX Olyraceæ" which includes *Pharus*, *Olyra* and *Luziola*. [*Panicææ* is their Section I.] Kunth (1815, Mem. Mus. Hist. Nat. 2:75) proposes a group "Gramina Olyrea" which includes *Zizania*, *Luziola*, *Hydrochloa*, *Pharus*, *Olyra*, *Zea*, and *Coix*.

Trinius (1826, Gram. Pan. 53, 55, 247, 249), places *Olyra* and *Milium amphicarpon* in his "Paniceorum Genera."

Nees (1829, Agros. Bras. 298) establishes "Familia Secunda. Gramineæ Olyreæ" for *Strepium*, *Caryochloa*, *Luziola*, *Pharus*, *Olyra* and *Coix* (Family I is *Panicææ*).

Kunth (1833, Enum. Pl. 67-70, 174) places *Amphicarpum*, *Olyreæ* and *Spinifex* in "III Paniceæ" which is very nearly the tribe *Panicææ* as recognized to-day, and subsequent authors generally have followed this disposition of these forms, though often associating *Pharus* and allied genera with them under *Panicææ*.

Though the *Olyreæ* and *Spinifex* depart rather widely from the *Panicum* type, their affinities are clearly with this tribe. *Lithachne* Beauv. forms the only known exception to the tribal character of fruit dorsally compressed or subcompressed.

OLYREAE: Plants monoecious; blades flat, abruptly narrowed into a petiole-like base, convolute in the bud, the consequent creases persistent in the mature blade. First glume wanting in the pistillate spikelets, both glumes and sterile lemma wanting in the staminate spikelets.

KEY.

- Inflorescence borne on leafy culms; fruit bony-indurated:
- Panicles terminal on culms or leafy branches, pistillate spikelets above, staminate spikelets below, in same panicle *Olyra*
 - Panicles all axillary or axillary and terminal; the terminal when present wholly staminate:
 - Fruit laterally compressed, conspicuously gibbous on upper dorsum *Lithachne*
 - Fruit dorsally compressed, lanceolate *Raddia*
 - Inflorescence consisting of 2 slender racemes, one staminate, the other pistillate, digitate at the summit of a naked culm; leafy stems distinct from base; fruit scarcely indurated *Mniochloa*

GENUS OLYRA L. MAY, JUNE, 1759, SYST. NAT. ED. 10. 1261.

“Masc. Cal. Gluma uniflora, aristata, Cor. Gluma mutica.

“Fem. Cal. Gluma uniflora, patula, ovata. Stylus 2-fidus. Sem. cartilagineum.

“*latifolia* A. Olyra. Sloan. jam. t. 64. f. 2.”

The figure referred to in Sloane represents the upper portion of a culm with three leaves and a short exserted panicle, large spikelets on clavate pedicels at the ends of the branches and small spikelets along the same branches from the base. The polynomial given is “Gramen panicum majus, spica simplici laevi, granis petriolis insidentibus.”

The type, from which the figure was made, is in the Sloane herbarium. The specimen in the Linnaean herbarium, from Jamaica, marked “Br” [Browne] agrees with the Sloane specimen. In Pugill. Jam. Pl. 408. Dec. 1759, Linnaeus gives a description of the species *O. latifolia*.

Mapira Adans. 1763, Fam. 2 : 39.

“Couronne de la gaine des feuilles: Membrane courte. Fleurs: Panicule & épi. Calice: 1 fleur, 2 bales & 1 arête. Corolle: 2 bales.”

In the “table” or index, page 574, under “Mapira Adans 39” is cited “Gramen. Sloan. t. 64. f. 2. Olyra. Lin.” This is the figure upon which Linnaeus bases *Olyra latifolia*.

Description.—Spikelets unisexual, unlike in appearance, the staminate and pistillate together in panicles terminating the culm or leafy branches, the pistillate spikelets on clavate pedicels on the upper panicle branches

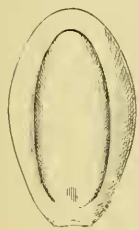


Fig. 1.
Olyra latifolia.

or at the ends of the branches, the staminate spikelets on slender pedicels or sessile on the lower branches or on the lower part of the pistillate branches; pistillate spikelets ovate-lanceolate, usually setaceous pointed, first glume wanting, second glume and sterile lemma membranaceous, nerved, acuminate-setaceous (or long-acuminate only in *O. longifolia* H. B. K.), the glume longer pointed than the lemma; fruit elliptic, lemma and palea thick, bony-indurated at maturity, the margins of the lemma scarcely inrolled; grain dorsally subcompressed, enclosed in the lemma and palea; staminate spikelets readily deciduous,

much smaller than the pistillate, narrowly lanceolate, glumes and sterile lemma wanting, lemma and palea thin membranaceous, the lemma 3-, the palea 2-nerved. Woody, bamboo-like perennials with ample blades abruptly narrowed into petiole-like bases, convolute in the bud before expanding, the consequent creases permanent and conspicuous in the mature blades. Species about twenty, confined to the tropics and subtropics of America except a form of *O. latifolia* L. or a close ally which is found in South Africa, and a form distantly related to *O. micrantha* H. B. K. in the Fiji Islands.

The known species fall into three rather well-marked groups.

1. *Panicle branches with elliptical or lanceolate, setaceous-pointed, pistillate spikelets above, staminate spikelets below; glumes glabrous or nearly so.*

* *Fruit smooth and shining, not pitted.*

OLYRA LATIFOLIA L., CAPILLATA Trin., CAUDATA Trin., CORDIFOLIA H. B. K., PUBESCENS Radd., SCABRA Nees.

** *Fruit not pitted, clothed with thick silky hairs at base and summit, on margins or back.*

OLYRA GLABERRIMA Radd., CILIATIFOLIA Radd., SEMIOVATA Trin., and the following:

Olyra yucatanæ

Panicles contracted, often a second one from the upper sheath, 8-15 cm. long, 2 cm. wide, axis and rachis scabrous; staminate spikelets on the lower branches and lower part of upper pistillate branches, 8 mm. long including the setaceous tip of the lemma, palea about 2 mm. shorter; pistillate spikelets 15 to 17 mm. long, the glume and sterile lemma scabrous, 7-nerved, 8 mm. long, and acuminate into flexuous setaceous tips as long again in the glume, half as long in the sterile lemma; fruit elliptical, obscurely pointed, 7 mm. long, 4 mm. wide, white and shining or old ivory toward maturity, the lemma silky-pubescent at base and on the margins. Culms tall, slender; sheaths mostly longer than the internodes, crisp-puberulent, blades 13 to 16 cm. long, one-third as wide, abruptly acuminate at the apex, trapezoid-truncate at base. Known only from Yucatan.

This species was described and figured by Millspaugh & Chase (1903, Field Col. Mus. Bot. 3: 46) under the name *Olyra semiovata* Trin. The examination of Trinius' type has shown this disposition of the Yucatan form to be erroneous. Type *Gaumer* 2372, No. 125941 Herb. Field Columbian Museum. "Common at Chichankanab, *Gaumer* 1389, Pocoboch, *Gaumer* 2372."

*** *Fruits pitted.*

OLYRA FASCICULATA Trin., FILIFORMIS Trin., HELICONIA Lindm. (Pl. Boliviana, a Miguel Bang lectae no. 508, distributed as *O. latifolia* belongs to the latter species.)

2. *Upper panicle branches with globose, hispid-bristly, setaceous-pointed, pistillate spikelets only; lower branches with staminate spikelets only; fruit pitted.*

OLYRA MICRANTHA H. B. K., HIRSUTA Trin., VENTRICOSA Nees. A specimen from "Feejee Islands, Sandalwood Bay" collected on the Wilkes expedition 1838-42 belongs in this group.

3. *Upper panicle branches with oval pistillate spikelets, not pointed, fruit smooth.*

OLYRA RAMOSISSIMA Trin., PANICUM LATERALE Presl and probably *O. SARMENTOSA* Doell, form a third group with unpointed pistillate spikelets on pedicels scarcely clavate, glabrous and unpitted fruit; slender-stemmed freely branching plants with blades and panicles scarcely exceeding 5 cm. long.

In *O. ramosissima* the staminate spikelets are villous and only on the lower branches of the panicles. Our specimens of *P. laterale* Presl (*Pittier* 3641, 11008, 12058) are destitute of staminate spikelets, but the pistillate spikelets with the first glume wanting, bony-indurated fruit and no stamens, as well as the firm blades abruptly narrowed into a petiole-like base unmistakably place this species in *Olyra*.

***Olyra laterale* (Presl).**

Panicum laterale Presl 1830. Rel. Haenk. 1: 305. "Hab. in Peruviae montanis huanoccensibus." The type, in the Presl herbarium in the National Museum at Prag, is labeled "*Panicum laterale* nov. sp. J. S. Presl" and "Pernano montano oronocciensis." No staminate spikelets are present, the first glume is wanting in the pistillate spikelets, though Presl's description reads: "gluma inferiore brevissima," and again "Gluma inferior minima vix ulla." Judging from the description *O. sarmentosa* Doell is this species or closely allied to it.

GENUS LITHACHNE Beauv. 1812, Agros. 135, t. 24, f. 11.

"De λθος, Lapis; ἀχνη, Palea.

"Culmus ramosus; Axes spicati: Spicae simplices, dissimiles; alia terminali, Locustis 1-floris, masculis.—Glumae nullae.—Paleae acutissimae.—Stamina 6; aliis axillaribus, Locustis 1-floris, semineis.—Glumae herbaceae, acutissimae.—Paleae coriaceo-induratae: infer. truncata, navicularis, gibba. * * * Spec. *Olyra pauciflora* Lin." [error for Swartz, in the index (p. 168) "*Olyra pauciflora* Sw. Vid. Lithachne 135" is given.]

Beauvois' statement that there are six stamens is an error, due probably to mistaking the separated cells for entire anthers.

Though the genus is based on *O. pauciflora* Sw. Beauvois does not transfer this name to his new genus; in the index (p. 166) the only species given under *Lithachne* is *axillaris* without reference as to what this name is based on. In the explanation of plate 24 the name *Lithachne axillaris* is used. *Olyra axillaris* Lam. 1797 Encyc. 4: 547 (see below), is the same species as *O. pauciflora* Sw. and Lamarck cites the latter name as a synonym under his own *O. axillaris* though published some years earlier. Beauvois does not cite Lamarck's work though he must have been acquainted with it and his *L. axillaris* is doubtless based on Lamarck's *O. axillaris*.

Olyra pauciflora Sw. 1788, Prod. 21. "Jamaica." The type labeled "*Olyra pauciflora* Sw. fl. ind. occid. Jamaica Sw." is in the Swartz herbarium at Stockholm.

Trinius (1820, Fund. Agros. 200) includes *Lithachne* under *Olyra*, "panicked, or spikelets axillary" covering both in the diagnosis; the gibbous pistillate floret is not mentioned. In 1826 (Gram. Pan. 251) Trinius makes the same disposition of *Lithachne*; the gibbous character of the floret being mentioned as: "perianthio semiovato, truncato."

Poiret (1823, Dict. Sci. Nat. 27: 60.) with the spelling "*Lithacne*" gives a brief description of the genus and species, transferring *O. pauciflora* Sw. to this genus, but giving Beauvois as author of the combination.

Sprengel (1825, Syst. 1 : 238.) includes *O. pauciflora* Sw. in *Olyra* giving *Lithachne* as synonym.

Nees (1829, Agros. Bras. 309) in a note after *Olyra floribunda* Radd. says that this species, which he inserts on the authority of Raddi not having seen it, is to be referred to *Lithachne* Beauv. with *Olyra pauciflora* Sw. The latter is not included in his *Agrostologia Brasiliensis*.

Kunth (1829, Rev. Gram. 1 : 29 and 1833, Enum. 1 : 68) places *O. pauciflora* Sw. in *Olyra* without mentioning the gibbous floret in either the generic or specific description, though the axillary panicles are noted. *Strepthium* Schrad. is given generic rank in the *Emmeratio* (p. 70) emphasis being given to "Culmi caespitiosi. Folia disticha. Racemi axillares, pauciflori" which would apply as well to *O. pauciflora* Sw.

Trinius (1835, Pan. Gen. 30)* places *O. pauciflora* Sw. together with *O. floribunda* Radd. and *O. polypodioides* Trin. in *Olyra* under "b) Spiculae femineae in racemis propriis, inferis vel paniculae masculae subjectis (Lithachne P. B.)." The gibbous fruit of *O. pauciflora* is noted.

Stendel (1854, Syn. Pl. Glum. 1 : 37) includes *Olyra pauciflora* Sw. as well as *O. floribunda* Radd. and *O. polypodioides* Trin. in *Olyra*, copying Trinius' synoptical heading given above. The gibbous floret of *O. pauciflora* Sw. is not mentioned.

Grisebach (1864, Fl. Brit. W. Ind. 536) includes *O. pauciflora* Sw. under *Olyra*; the pistillate "flower obversely deltoid," is mentioned. In 1866 (*Cat. Pl. Cub.* 229) Grisebach makes the same disposition of it and includes *O. pincti* Wright and *O. strephtioides* Griseb. also.

Fournier (1876, Bull. Soc. Bot. Belg. 15 : 464, 465) in a paper "Sur les Graminées mexicaines à sexes séparés," distinguishes between *Olyra*, *Lithachne* and *Strepthium* but makes some errors in detail. Of *Lithachne* he says the male spikelets are superior and the female inferior which serves to distinguish it from *Olyra*; and again, that *Lithachne axillaris* Beauv. (*O. pauciflora* Sw.) establishes a transition from *Lithachne* to *Strepthium*, that the inferior axillary branches are reduced to a single flower, but these [pistillate spikelets] still form part of the same terminal panicle as the males, that this species further differs from *Strepthium* in the bellied or swollen female floret. Of *Strepthium* he says that the male and female spikelets are in different inflorescences. But some of these distinctions do not hold good in all cases and some are wholly in error. In *O. pauciflora* the axillary panicles bear one to several staminate spikelets below the terminal pistillate one; again we find no specimens in which pistillate spikelets are truly in the terminal panicle, but they sometimes appear to be so since the upper blades are crowded at the summit of the culm and their respective axillary inflorescences overlap the terminal one, which, so far as our specimens show, is entirely staminate when present, but it is often wanting. As for *Strepthium* while the staminate and pistillate spikelets are almost constantly in distinct racemes we find staminate spikelets (or their characteristic slender pedicels as distinguished from the clavate pedicels of the pistillate spikelets) below the pistillate spikelets in the

* Mem. Acad. Petersb. Ser. VI, 3 : 2118. 1835.

narrow axillary panicles of a Liebmann specimen of *S. strictiflorum* Fourn. cited by Fournier in his original description.

Doell (1877 in Mart. Fl. Bras. 2: 2 315) includes all these forms in *Olyra*, dividing the genus into "I. Acandrogynæ. Panicula terminalis, nonnunquam cum una alterave panicula accessoria laterali. Spiculæ utrisque sexus in eadem panicula, femineæ pauciores." [It should be noted that the lateral panicles of this group are terminal on leafy branches not axillary as in II and III.] This includes *O. latifolia* L. and fourteen other species several of which we have not seen, but all (except *O. sympodica* Doell) apparently coming within the genus *Olyra* as limited above. "II Pleurandrogynæ. Paniculæ laterales, basi masculæ, apice femineæ (supremararius terminalis et mere masculæ)." This includes *O. flaccida* Doell, which we have not seen, and *O. pauciflora* Sw. "III. Heterogenicæ. Paniculæ sexu distinctæ, monoecæ, inferiores mere femineæ, nonnunquam ad spiculam unicam redactæ, superiores masculæ. Panicula terminalis, ubi adest et ipsa mascula." A footnote is added here saying that these characters are those of the genus *Strepium* which in his opinion has too little to distinguish it. Under this division are *O. polypodioides* Trin., *O. floribunda* Radd., and *O. nana* Doell; *O. pineti* Wright is added at the end with the observation that this Cuban species also belongs in this section of the genus. In the description of the latter the gibbous pistillate floret is noted.

Fournier (1881, Mex. Pl. 2: 4) recognizes both *Lithachne* and *Strepium* as genera, but he gives no generic description and the key is inaccurate as regards position of pistillate spikelets in the latter two. (See above under Fournier, 1876.) *Lithachne* and *Strepium* are divided on the gibbous floret of the first and linear-elliptic floret of the second.

Bentham & Hooker (1883, Gen. Pl. 3: 1110) include all these forms in *Olyra*, remarking that *Lithachne*, *Strepium* and *Raddia* form a section with axillary few-flowered pistillate or androgynous panicles.

Hemsley (1885, Biol. Cent. Am. 3: 510) includes all under *Olyra*, transferring Fournier's *Strepium strictiflorum* to *Olyra*.

Hackel (1887, Engler & Prantl, Pfl. Fam. 2: 239) includes *Lithachne*, *Strepium* and *Raddia* as synonyms under *Olyra* without subdivisions or sections.

Description.—Spikelets unisexual, unlike in appearance; inflorescence consisting of few to several small panicles or racemes, solitary or in fascicles of two to four or five, short-exserted from the sheaths, each bearing one pistillate spikelet on a clavate pedicel at the summit, and one to several staminate spikelets on slender pedicels, below; a narrow short-exserted terminal, wholly staminate panicle often present, rarely a fascicle of 2 or 3 such panicles; pistillate spikelets V-shaped owing to the greatly swollen fertile lemma; first glume wanting; second glume and sterile lemma membranaceous, nerved, unequal, long-acuminate; fruit laterally subcompressed (forming an exception to the tribe character of dorsally compressed fruit in *Panicææ*), lemma and palea thick bony-indurated, the lemma greatly



Fig. 2.
Lithachne
pauciflora.

swollen or gibbous on the back, so as to appear in side view half obcordate-truncate, the margins inrolled over a narrow palea; grain laterally sub-compressed, inclosed in the lemma and palea. Staminate spikelets narrowly lanceolate, reduced to the thin-membranaceous lemma and palea and 3 stamens. Caespitose, herbaceous, perennials with simple culms and blades contracted at base and convolute in the bud as in *Olyra*. Only two species known to us (*O. flaccida* Doell may belong here), confined to the tropics and subtropics of America.

While neither the laterally-compressed gibbous fruit nor the axillary inflorescence alone would afford sufficient reason for recognizing *Lithachne* as a genus, these being combined and constant, together with a habit distinct from that of *Olyra*, and the fact that there are no intermediate species (so far as known), seem to make generic rank the more natural disposition of these forms.

LITHACHNE PAUCIFLORA (Sw.) Beauv.

Olyra pauciflora Sw. 1788, Prod. 21. (See above.)

Olyra acillaris Lam. 1797. Encyc. 4: 547. "a Caienne * * * Richard (V. s)" "Lam. illust. t. 751 f. 2," is cited. The published date of the part in which this plate occurs is 1823, but according to Sherborn and Woodward * plates 1-100 were published in 1791; 700 in 1797; 901-950 in 1819. Evidently some of the plates were printed some time before they were issued. We have not seen the type but the plate referred to above is unmistakable.

Lithachne acillaris Beauv. 1812, Agros. 166 t. 24, f. 11. No type indicated, presumably based on *Olyra acillaris* Lam.

Lithachne pauciflora Beauv.; 1823, Poir. Diet. Sci. Nat. 27: 60. Two varieties of this species have been described by Kuntze (Rev. Gen. 3: 2357) from Bolivia.

***Lithachne pineti* (Wright).**

Olyra pineti Wright 1862; Griseb. Mem. Acad. Amer. Sci. Art. 8: 532. "Prope Monte Verde, inter pinorum folia dejecta 1536" [Wright, Cuba]. The type is in the Grisebach herbarium; a duplicate in the Gray herbarium is a tuft of numerous very slender culms. Besides the label the latter sheet bears a slip in Wright's hand "*Olyra Pineti*. Growing among masses of fallen pine leaves near Mr. Prevals, M. V., [Monte Verde] Aug. 22."

A delicate species apparently known only from the Wright collection.

GENUS RADDIA Bertol. 1819, Bologn. Opusc. Sc. 3: 410.

"Flores masculi in racemis distinctis, superioribus. Calyx uniflorus, biglumis, glumis acuminatis, muticis. Corolla nulla. Filamenta brevissima. Antherae lineares longae.

"Flores foeminei in spicis distinctis, inferioribus. Calyx unifloris biglumis, patens, gluma altera longiore, aristata. Corolla biglumis, mutica, stylus simplicissimus."

* Ann. Mag. Nat. Hist. 17: 582, 1906.

But one species is given:

“*Raddia Brasiliensis*.

“Habitat in provincia di Rio Janeiro Brasiliae, v. s.”

The specimen was collected by Raddi since Bertoloni states that the specific name will commemorate the courageous voyage to Brazil of Raddi to whom the genus is dedicated. The author remarks that this genus serves to unite *Coix* with *Olyra*.

The whereabouts of Bertoloni's type, if it be in existence, is not known. In the Trinius herbarium is a specimen from Bahia, Brazil, collected by Riedel, labeled *Olyra floribunda* Raddi by Trinius, and the original of plate 345 in the *Icones* which agrees well with Bertoloni's description.

Raddi (1823, *Agros. Bras.* 20) redescribes what is evidently a specimen from the same collection under the name “*Olyra floribunda* * * * nob” and gives *Raddia brasiliensis* Bert. as a synonym. “Reperitur ad radicem Montis Corcovado, nec alibi.” [Mt. Corcovado is some three miles southwest of Rio Janeiro.] Raddi's type has not been examined. Nees says that nothing but the description remains, but search among Raddi's Brazilian collections in the herbarium of the botanical garden of Pisa may bring it to light. The two descriptions apply so well to Trinius' specimen that there is no doubt that this species was correctly interpreted by Trinius.

Sprengel (1827, *Syst.* 4: *Cur. Post.* 29) transfers *R. brasiliensis* Bertol. to *Olyra* without comment.

Nees (1829, *Agros. Bras.* 309) includes *O. floribunda* in *Olyra* with the following observation: “De hac specie, ad Lithachmas, Pal. de Beauv., cum *Olyra pauciflora* Sw. referenda, praeter verba Raddiana nihil superest, quod ad feramus.” The description states that the pistillate spikelets are in distinct axillary racemes, but does not mention the form of the floret.

Strephium Schrad. 1829, in Nees *Agros. Bras.* 298.

“Spiculae uniflorae, muticae; masculae et foeminae in distinctis racemis ejusdem plantae. Spiculae masculae: calycis glumae duae, linearilanceolatae; inferior acuminata; corollinae valvulae nullae. Foeminae spiculae: calycinae glumae duae, ovato-lanceolatae, acuminatae; valvulae totidem, cartilagineae. * * * Inflorescentia: Racemi, axillares, pauciflori. Culmi caespitosi, foliis subdistichis.

“Observ. Genus hocce *Olyrae* proximum, sed diversum foliatione, spicularum dispositione axillari, floribus masculis superius positis atque glumarum structura et proportione. Schrad.”

This is based on a single species, *Strephium distichophyllum* “Schrad. ined.” We have not seen the type of this, but the description applies so well to *Olyra polypodioides* Trin. that it must be a close ally of that species (the type of which, also from Bahia, Brazil, was examined in the Trinius herbarium at the St. Petersburg Academy of Sciences), as stated by Trinius (1835, *Mem. Acad. Petersb.* Ser. VI, 3: 2117). Nees' description of *Olyra floribunda* Raddi (l. c.) would place this species in *Strephium* instead of in *Olyra*, but he had not seen *O. floribunda* and possibly Schrader's genus and species were inserted on Schrader's authority only without

having been seen by Nees. Trinius' specimen of *O. floribunda* is closely related to *Strepium strictiflorum* Fourn., though much smaller in all its parts, but these are closely congeneric with *O. polypodioides*. This is well brought out in the detailed drawings of *O. polypodioides* and *O. floribunda* in plate 45, Doell in Mart. Fl. Bras. vol. 2, pt. 2.

Kunth (1833, Enum. 1:70) recognizes *Strepium* as a genus (see note under *Lithachne*.)

Trinius (1835, Pan. Gen. 29)* places *O. floribunda* Radd. and a new species, *O. polypodioides* Trin. in *Olyra* (see note above under *Lithachne*) and in the Icones (1836, pl. 345) the former is figured.

Steudel (1854, Syn. Pl. Glum. 1:36) includes these forms in *Olyra* (see note above under *Lithachne*).

Wright (1871, Anal. Acad. Cien. Habana 8:202; 1873, Sauv. Fl. Cub. 193) transfers *Digitaria pulchella* Griseb. to *Strepium* with the mark of doubt.

For the disposition of these forms by Fournier (1876, Bull. Soc. Bot. Belg. 15:465; and 1881, Mex. Pl. 2:4); Doell (1877, Mart. Fl. Bras. 2:2315); Bentham & Hooker (1883, Gen. Pl. 3:1110); Hemsley (1885, Biol. Cent. Am. 3:510), and Haekel (1887, Engler & Prantl, Pfl. Fam. 2:239) see notes above under *Lithachne*.

Description.—Spikelets unisexual, unlike in appearance; the staminate and pistillate in distinct small panicles, the staminate terminal or from the upper nodes; the pistillate axillary, short-exserted, few-flowered, usually from the lower nodes (a few staminate spikelets sometimes borne below the pistillate spikelets in *Strepium strictiflorum*); pistillate spikelets lanceolate, first glume wanting, second glume and sterile lemma membranaceous, strongly nerved, subequal, acuminate; fruit dorsally subcompressed, lanceolate, acute; lemma and palea bony-indurated but less so than in *Olyra* and *Lithachne*, the margins flat, nearly meeting over the palea.



Fig. 3.
Raddia
polypodioides.

Staminate spikelets linear-lanceolate. Low caespitose herbaceous perennials with simple culms and blades narrowed at the base, the creases indistinct, usually conspicuously distichous and turned with the surfaces on a single plane. Five known species, natives of the tropics and subtropics of America.

RADDIA BRASILIENSIS Bertol. 1819, Bologn. Opusc. Sc. 3:410.

Olyra floribunda Radd. 1823, Agros. Bras. (See above.)

Olyra brasiliensis Spreng. 1827, Syst. 4: Cur. Post. 29, based on *Raddia brasiliensis* Bertol.

Strepium floribundum Nees 1854; Steud. Syn. Pl. Glum. 1:36, based on *Olyra floribunda* Radd.

Raddia distichophylla (Schrad.).

Strepium distichophyllum Schrad. 1829, in Nees Agros. Bras. 298.

“Habitat in sylvis primaevae, prov. Bahiensis ad viam Felisberti alibique.”

* Mem. Acad. Petersb. Ser. VI, 3:2117.

Raddia polypodioides (Trin.).

Olyra polypodioides Trin. 1835, Mem. Acad. Petersb. Ser. VI. 3: 2117. "V spp. Bahiens."

Raddia strictiflora (Fourn.).

Strepitum strictiflorum Fourn. 1876, Bull. Soc. Bot. Belg. 15: 465. "Arroyo Sellero (Karw. [insky] n. 1473 in herb. Petropolitano)."

Olyra strictiflora Hemsl. 1885, Biol. Cent. Am. Bot. 3: 510; based on the preceding.

Raddia nana (Doell).

Olyra nana Doell 1877, in Mart. Fl. Bras. 2: 329. "Ad Ega prov. do alto amazonas (Martius)." The type is in the herbarium of the Botanisches Museum at Munich.

Raddia concinna (Hook. f.).

Olyra concinna Hook f. 1896, Bot. Mag. III, 52: t. 7469. "*O. concinna* arrived at the Royal Gardens, Kew, in 1891 * * * sent by Mr. C. Winkle, from San Jose in Costa Rica. It flowered in January, 1895."

Olyra sympodica Doell, 1877 in Mart. Fl. Bras. 2: 322 probably belongs in this group as suggested by Doell (op. cit. p. 329). It seems likely that the "sympodium" he describes is not truly a sympodium but that the culms simulate this habit by a twisting of the internodes, as not infrequently occurs in this genus and in *Lithachne*.

GENUS MNIOCHLOA GEN. NOV.

Inflorescentia monoica, racemis binis tenuibus spiciformibus, alter staminato alter pistillato, summo apici culmi nudi insidentibus constans. Spiculae pistillatae 1-florae, oblongo-lanceolatae dorsaliter compressae,

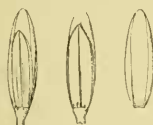


Fig. 4.

Mniochloa pulchella.

solitariis brevissime clavellato-pedicellatae, secus rachem triangularem tenuem unilaterally dispositae; gluma prima nulla, gluma secunda lemmati sterili aequans, setis nullis; lemma fertile albo cartilagineo subindurato, marginibus planis, paleam similem amplectens; caryopsis dorsaliter compressa; staminum rudimentis nullis. Spiculae staminatae pistillatis breviores, glumis lemmatique sterili nullis; lemmati paleaque membranaceis; lemmati 1-nervo, palea 2-nervo, staminibus 3. Gramina perennia humilia caespitosa. Culmi fertiles 1-3-nodi, vaginis brevibus laminis carentibus instructi. Culmi steriles crebre, et plerumque duplici ordine foliosi; laminis planis, 2 cm. longis aut minoribus, ovato-lanceolatis, basi abrupte contractis et quasi brevi petiolatis. Trahit nomen a *μνιον musco* et *χλόα gramine* pro stirpium sterilium similitudine *Mnii* generis cuiusdam musei.

Typus.—*Digitaria pulchella* Griseb.

Inflorescence monoecious consisting of two slender spike-like racemes, one pistillate the other staminate, at the summit of a slender naked culm; pistillate spikelets dorsally compressed, 1-flowered, lanceolate-oblong, solitary on very short clavate pedicels along one side of a slender triangular rachis; first glume wanting, second glume and sterile lemma subequal, not setaceous; fertile lemma white-cartilaginous subindurated, the margins flat, enfolding a palea of like texture and equal length; grain dorsally compressed; staminate spikelets smaller than the pistillate, glumes and sterile lemma wanting, lemma and palea membranaceous, equal, the lemma 1-nerved, palea 2-nerved; stamens 3. Low tufted perennials; the flowering culms with 1 to 3 nodes, the short sheaths destitute of blades, distinct from the sterile stems which bear several to many more or less distichous, flat, ovate-lanceolate, blades, less than 2 cm. long, narrowed into a petiole-like base. Name from *μυρίον* moss and *χλόα grass*, from the resemblance of the sterile stems to *Mnium* a genus of mosses. But two species known, both from Cuba.

Type.—*Digitaria pulchella* Griseb.

***Mniochloa pulchella* (Griseb.).**

Digitaria pulchella Griseb. 1866, Cat. Pl. Cub. 231. "Cuba or. (Wright) 3448). E[ndemic]." The type in the Grisebach herbarium at Göttingen was examined by Prof. A. S. Hitchcock.

Strepium? pulchellum Wright 1871, Anal. Acad. Cien. Habana 8 : 202; Sauv. Fl. Cub. 193. 1873. "[3448.] *Digitaria pulchella* Gris. Crece al borde de precipicios en el Yunque de Baracoa."

A description follows giving the monoecious character of the inflorescence, a point which seems to have escaped Grisebach's notice.

A delicate species, flowering culms filiform, 15 to 25 cm. high, nodes 2 or 3, at least the lower geniculate, the upper internode and peduncle elongated, sheaths slightly inflated, 1 to 3 cm. long, racemes erect or ascending 2 to 3.5 cm. long, the staminate slightly shorter than the pistillate; pistillate spikelets glabrous, 2.5 mm. long; glume and sterile lemma about one-fourth shorter than the glabrous fruit; staminate spikelets 1.5 mm. long, glabrous. Sterile stems spreading or prostrate, the distichous leaves approximate, the sheaths, at least the upper overlapping, ciliate on the margin and at the summit, blades firm, 8 to 18 mm. long, 3 to 5 mm. wide, subacute, sparsely hairy along the mid-nerve, pale green above, dark purplish beneath, undulate on the margins. Known from a single collection, Wright 3448. In addition to the type, specimens of this number have been examined in the Gray herbarium and in the Sauvalle herbarium in the Estacion Agronomica, Santiago de las Vegas, Cuba. The specimen in the Gray herbarium has five flowering culms from the single small tuft. On the sheet is a slip in Wright's hand "Gram. near *Olyra* * * not *Digitaria*, nor. *Panicum*."

***Mniochloa strephioides* (Griseb.).**

Olyra strephioides Griseb. 1866, Cat. Pl. Cub. 229. "Cuba occ. (Wright) 3435)." Type in the Grisebach herbarium at Göttingen.



Mniochloa pulchella (Griseb.) Chase.

Plant, natural size. Staminate spikelet, two views of pistillate spikelet and fruit magnified 10 diameters.

